

Curriculum Vitae

Name: Ketan J Patel
Nationality: Dual Kenyan and British

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Work

PNAC, Medical Research Council
Laboratory of Molecular Biology,

Hills Rd, Cambridge. CB1 0QH

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Qualifications:

1986 M.B.B.S. (Distinction) Royal Free Hospital, University of London.

1989 M.R.C.P

1994 PhD University of Cambridge

Awards, Prizes and Named lectures:

98th Herter Lecture – NYU May 9th 2014 (<http://biomolpharm.med.nyu.edu/about-us/herter-lecture-series/herter-lecture-list>)

Award of Merit Fanconi Anaemia Research Fund USA 2013 (4 awarded in 25 years)

Award from Childrens Leukaemia Trust for significant contribution into the causes and prevention of childhood leukaemia, 2009.

Elected to a research fellowship, Gonville and Caius College Cambridge, 1995.

Max Perutz Prize for Research, MRC Laboratory of Molecular Biology, 1993.

Beverly Sackler Fellowship, Cambridge University, 1991.

University of London, Distinctions in Medicine, 1985.

University of London, Distinctions in Surgery, 1985.

Previous hospital appointments:

1986 - 1987:

House physician

Professorial medical unit, Royal Free Hospital.

House surgeon

General surgery, Royal Free Hospital.

1987 - 1989:

Senior House Officer

Rotational appointment, Northwick Park Hospital and Clinical Research Centre.

1989 - 1993:

Honorary registrar

Department of Medicine, Addenbrookes Hospital.

1993 - 1994:

Registrar in medicine

General medicine and gastroenterology, Chase Farm Hospital, Enfield
(March 1993 - March 1994)
General medicine, hepatology and gastroenterology, Royal Free
Hospital Liver Unit (March 1994 - October 1994)

Fellowships/Appointments:

- 1989 - 1992** Awarded MRC Special Training Fellowship in Recombinant DNA Research (40 awarded nationally that year)
- 1995 - 1999** Awarded MRC Clinician scientist Fellowship, Cambridge University (8 awarded nationally that year)
- 1996 - 2000** Elected to a research fellowship Gonville and Caius College
- 1999 - 2004** Awarded MRC Senior Clinical Fellowship (2 awarded nationally that year)
- 2004 - 2007** Tenure-track MRC programme leader, MRC Laboratory of Molecular Biology
- 2007 - Now** Tenured MRC programme leader, MRC Laboratory of Molecular Biology
- 2013** Election to the membership of EMBO
- 2013** Election to the Academy of Medical Sciences UK (FMedSci)
- 2015** Election to the Royal Society London (FRS)

Teaching Experience:

I am currently a teaching fellow and director of medical studies at Gonville and Caius. I am actively involved with the medical education of a total of around 100 Caius medical students per year.

Supervised PhDs Completed:

- 2004: 'A genetic system to define defective DNA repair in Fanconi Anaemia'. (Cambridge University). G. Mosedale.
- 2004: 'Protein-protein interaction in the Fanconi Anaemia Pathway'. (Cambridge University). W.M Tan.
- 2008: 'Biochemical and structural studies of the Fanconi anaemia gene product FANCD2'. (Cambridge University). F. Perrina.
- 2008: 'Biochemical characterisation of the FANCD2 protein'.(Open University). P.Pace.
- 2008: 'A functionally conserved Fanconi anaemia pathway in Dictyostelium Discoideum'. (Cambridge University). X.Y Zhang.
- 2011: 'Modelling Fanconi anaemia in Mice: Cellular and pathological consequences of *Six4* deficiency'. (Cambridge University). G. Crossan.
- 2011: 'The Fanconi anaemia DNA repair pathway counteracts the toxic effects of naturally produced aldehydes'.(Cambridge University). F Langevin.

Grants awarded 1999-2005:

MRC Senior fellowship 1999 –2004 (£600,000)
MRC Training fellowship (post doc grant) 2000 –2003 (£110,000)
FARF fellowship 2002-2006 (£200,000)
AICR Project grant 2002 –2006 (£96,000)
AICR Project grant 2005 –2008 (£134,000)
LRF Project grant 2002 –2006 (£110,000)
CLT Research assistant grant 2005 –2008 (£110,000)
CwL Project grant 2004 –2007 (£96,000)
Danish Cancer Society 2007 – 2010 (1278000 DK = £118,000)
FEBS 2007-2010 (£120,000)
LRF Project grant 2008 – 2011 (£150000)
March of Dimes Foundation 2012 -2015 (£140,000)
Children with cancer UK 2012 -2015 (£300,000)
CRUK programme grant 2012 – 2017 (£600,000)
Wellcome trust investigator award 2015 – 2020 (£1,800,000)

(MRC –Medical Research Council, FARF –Fanconi Anaemia Research (USA) Foundation, AICR - Association of International Cancer Research, LRF – Leukaemia Research Fund, CLT- Childrens Leukaemia Trust, CwL – Children with Leukaemia)

Journal reviewing

Journals reviewed for over 2008 – 2009: Cell, Nature, Nature Genetics, Cancer Cell, Molecular Cell, Cell Stem Cell, Developmental Cell, Current Biology, Genes and Development, Science, Human Molecular Genetics, Journal of Biological Chemistry, Blood and Oncogene.

Invited Conferences/ lectures

2001

Fanconi Anaemia Research Foundation annual conference (FARF)

2003

FARF Houston Texas – Invited lecture

2004

Juan March meeting Madrid 'Molecular Understanding of Human Chromosome breakage syndromes' – Invited lecture

FARF Philadelphia USA- Chairing a session and invited lecture

2005

FASEB Meeting Snowmass Arizona 'Genetic Mechanisms in Recombination and Repair' – Invited lecture

FARF Geneva- Chairing a session and invited lecture

2006

EMBO Meeting Seillac France 'Recombination and Genome stability '- Invited lecture.

FARF Bethesda USA - Chairing a session and invited lecture

2007

FARF Chicago USA - Chairing a session and invited lecture

2008

EMBO Meeting Ill Ciocco Italy 'Recombination and Genome stability ' – Invited lecture.

2009

Gordon research conference 'Vertebrate DNA repair' Ventura California – Invited lecture and session chair.
SFB meeting 'Molecular mechanisms of normal and malignant haematopoiesis' Munich – Invited lecture

2010

European haematology association annual meeting Barcelona- invited lecture

2011

FARF Barcelona – Session chair

European haematology association meeting on AML Nice – invited lecture

2012

Genentech San Francisco- Invited lecture

Lawrence Livermore Labs Berkeley – Invited lecture

IRB Meeting Barcelona "DNA damage response in human disease" Invited lecture

German Cancer Centre DFKZ Heidelberg – Distinguished Lecture series

3R's meeting Japan – Invited Lecture

28 – RBC –NIRS International Symposium Kyoto – Invited lecture

America Society of Haematology (ASH) Annual meeting Atlanta – Plenary lecture

Erasmus annual Haematology lecture series Rotterdam – Invited lecture

2013

Keystone Stem cell regulation meeting Banff – invited lecture

Distinguished lecture series Max Plank Institute Martinsried

Annual meeting of the French haematology Society Paris – invited lecture

EHA (European society of haematology) Stockholm – Invited lecture

ASBM Annual meeting Boston – Invited lecture

Harvard Medical School – Invited lecture

60th Anniversary of DNA meeting Technion Haifa – Invited lecture

Brandies USA –Invited lecture

UT SouthWestern Childrens hospital Dallas Texas –Invited lecture

MD Anderson Houston Texas – Invited lecture ERO series

2014

AACR Meeting San Diego – Invited lecture

UC Davis – Invited lecture

Scripps San Diego – Invited lecture

British Society of Cell Biology annual meeting – Invited lecture

98th Herter Lecture – NYU

Genentech San Francisco- Invited lecture

Original Publications

***Patel.K.J.**, and Neuberger,M.S. (1993) 'Antigen presentation by the B cell antigen receptor is driven by the α/β sheath and occurs independently of its cytoplasmic tyrosines'. **Cell**.74.939 - 946.

Neuberger.M.S, **Patel.K.J.**, Dariavach.P., Nelms.K., Peaker.C.J.G and Williams.G.T.W. (1993). 'The mouse B cell antigen receptor; definition and assembly of the core receptor of the five immunoglobulin isotypes'. **Immunol.Rev**.132.

Williams.G.T.W., Peaker. C.G.J, **Patel.K.J.**, and Neuberger..M.S. (1994). 'The α/β sheath and its cytoplasmic tyrosines are required for signalling by the B cell antigen receptor but not for capping or serine threonine kinase recruitment'. **PNAS** . 91. 474 - 478.

***Patel.K.J**, Yu.V, Lee.H.L, Corcoran..A, Thistlewaite. F.C, Evans. M, Colledge.W, Friedman. L, Ponder. B.A.J and Venkitaraman. A.R. (1998). 'Involvement of Brca2 in DNA repair'. **Molecular Cell**. 1. 347 - 357.

Friedman.L, Thistlewaite. F.C, **Patel. K.J**, Yu.V, Lee. H.L, Venkitaraman. A.R, Colledge. W, Evans. M, and Ponder. B.A.J. (1998). 'Thymic Lymphomas in mice with a truncating mutation in Brca2'. **Cancer Research**. 53. 1558

*Pace P,Johnson M,Tan WMT, Mosedale G, Sng C, Hoatlin M, deWinter J, Joenje H, Gergely F and **Patel K.J** (2002). 'FANCE : The link between Fanconi anaemia complex assembly and activity'. **EMBOJ**. 21. 13, 3414 – 3423.

*Vandenberg C, Gergely F, Ong C, Pace P, Mallery D, Hiom K, and **Patel K.J**. (2003). 'BRCA1- Independent Ubiquitination of FANCD2'. **Molecular Cell**. 12. 247-254.

*Niedzwiedz W, Mosedale G, Johnson M, Ong C, Pace P, and **Patel K.J** (2004). ' The Fanconi anemia gene FANCC promotes homologous recombination and error prone DNA repair'. **Molecular Cell**. 15. 607 –620.

*Mosedale G, Niedzwiedz W, Alpi A, Perrina F, Leal J, Langevin F, Johnson M, Pace P and **Patel K.J** (2005). ' The Vertebrate Hef orthologue is a component of the Fanconi Anaemia tumour suppressor pathway'. **Nature Structural and Molecular Biology**. 12 (9):763-771.

Simpson LJ, Ross AL, Szüts D, Alviani A, Oestergaard VH, **Patel K.J** and Sale JE (2006). 'RAD18-independent ubiquitination of proliferating-cell nuclear antigen in the avian cell line DT40'. **EMBO Reports**. 7 (9): 927-932.

Richardson JP, Wang M, Clarke JH, **Patel K.J**, Irvine RF (2007). 'Genomic tagging of endogenous type IIbeta phosphatidylinositol 5-phosphate 4-kinase in DT40 cells reveals a nuclear localisation'. **Cell Signal**. 19(6):1309-14.

*Oestergaard V, Langevin F, Kuiken H, Pace P, Niedzwiedz W, Simpson L, Ohzeki M, Takata M, Sale J and **Patel K.J** (2007) 'Deubiquitination of FANCD2 is required for DNA crosslink repair'. **Molecular Cell**. 28 (5): 798 -809

*Alpi A, Langevin F, Mosedale M, Muchida Y, Datta A and **Patel K J** (2007) 'UBE2T, the FA core complex and FANCD2 are recruited independently to chromatin: A basis for the regulation of FANCD2 monoubiquitination'. **Molecular and Cellular Biology** 27 (24): 8421 -30.

*Alpi A, Pace P, Babu MM, **Patel K.J** (2008) 'Mechanistic insight into site-restricted monoubiquitination of FANCD2 by Ube2t, FANCL, and FANCI'. **Molecular Cell** 32(6): 767-777.

*Rosado IV, Niedzwiedz W, Alpi AF, **Patel K.J** (2009) 'The Walker B motif in avian FANCM is required to limit sister chromatid exchanges but is dispensable for DNA crosslink repair'. **Nucleic Acids Res**. 37(13): 4360-70

*Xhang XY, Langenick J, Traynor D, Babu M, Kay R, **Patel K.J** (2009) 'XPF and not the Fanconi anaemia or the TLS polymerase Rev3 is responsible for extreme sensitivity to cisplatin in Dictyostelium Discoideum'. **PLOS Genetics**. 5(9): e1000645. doi:10.1371/journal.pgen.1000645

*Pace P, Mosedale G, Hodskinson MR, Rosado IV, Sivsubraminium M, **Patel K.J** (2010) 'Ku70 corrupts DNA repair in the absence of the Fanconi Anaemia pathway'. **Science**. 329 (5988):219-23.

*Crossan GP, van der Weyden L, Rosado IV, Langevin F, Gaillard PH, McIntyre RE; Sanger Mouse Genetics Project, Gallagher F, Kettunen MI, Lewis DY, Brindle K, Arends MJ, Adams

DJ, **Patel K.J** (2011) 'Disruption of mouse Slx4, a regulator of structure-specific nucleases, phenocopies Fanconi anemia'. **Nature Genetics**. 43:147-52.

*Langevin F, Crossan GP, Rosado IV, Arends MJ, **Patel K.J** (2011) 'FANCD2 counteracts the toxic effects of naturally produced aldehydes in mice'. **Nature**. 475:53-58.

*Rosado IV, Langevin F, Crossan GP, Takata M, **Patel K.J** (2011). 'Formaldehyde catabolism is essential for cells deficient in the Fanconi anaemia DNA – repair pathway' **Nature Structural and Molecular Biology**.18(12). 1432-4.

Sarkies P, Murat P, Phillips LG, **Patel KJ**, Balasubramanian S, Sale JE. (2012). 'FANCD1 coordinates two pathways that maintain epigenetic stability at G-quadruplex DNA'. **Nucleic Acids Res**. 40(4):1485-98.

*Garaycochea JI, Crossan GP, Langevin F, Daly M, Arends MJ, **Patel K.J** (2012). 'Genotoxic consequences of endogenous aldehydes on mouse haematopoietic stem cell function'. **Nature**. 489:571-575.

Hodskinson MG, Silhan J, Crossan GP, Garaycochea JI, Mukherjee S, Johnson CM, Schärer OD, **Patel KJ** (2014). 'Mouse SLX4 is a tumour suppressor that stimulates the activity of the nuclease XPF-ERCC1 in DNA crosslink repair'. **Molecular Cell in Press**

Rajendra E, Oestergaard V, Langevin F, Wang M, Dornan G, **Patel K.J*** and Passmore LJ* (2014). 'The genetic and biochemical basis of FANCD2 monoubiquitination'. **Molecular Cell in Press**. (* Joint communicating authors)

Oberbeck, N, Langevin F, King, G, Wind, N, Crossan G.P* and **Patel K.J*** (2014). 'Maternal aldehyde elimination during pregnancy preserves the fetal genome'. **Molecular Cell in press**. (* Joint communicating authors)

Reviews

Joenje H, **Patel K.J** (2001). 'The emerging genetic and molecular basis of Fanconi Anemia'. **Nature Reviews Genetics** 2, 446 – 457.

Niedzwiedz W and **Patel K.J** (2005). 'Dubbing a tumour suppressor pathway'. **Cancer Cell**. Feb;7(2). 114–115.

Patel K.J (2007). 'Fanconi anemia and breast cancer susceptibility'. **Nature Genetics**. 2 (39): 142 -143.

Patel K.J, Joenje H. (2007). 'Fanconi anemia and DNA replication repair'. **DNA Repair (Amst.)** 6, 885–890

Alpi, A.F. **Patel, K.J.** (2009). 'Monoubiquitylation in the Fanconi anemia DNA damage response pathway'. **Mutation Research**: 2009 Apr 5;8(4):430-5.

Crossan G. **Patel K.J** (2011). 'The Fanconi anaemia pathway orchestrates incisions at sites of crosslinked DNA'. **Journal of Pathology**: 226 (2) 326-337.

Patel K.J, Crossan G, Hodskinson M. (2011). 'Ring-fencing BRCA1 tumor suppressor activity'. **Cancer Cell**. 20. (6) 693-5.

